

**REMARKS**

Upon entry of the present Reply, claims 1-10, 43, 44, 46-53 and 55-63 are pending in the application. Claims 6, 50 and 60 are amended herein. Claims 11-42, 45, 54 and 64 were previously canceled.

Claims 6, 50 and 60 are amended only to address the indefiniteness issue. No other claims are amended.

Applicants respectfully submit that the present after-final Reply should be entered, because (1) it shows that the claims are in condition for allowance, or, alternatively, (2) it brings the claims into better condition for appeal.

**Indefiniteness Issues**

Applicants respectfully submit that the rejections to claims 6, 50 and 60 set forth on pages 7-8 of the Office Action are overcome by the amendments of these claims. Specifically, with respect to the definition of Z, Applicants consider that the presently submitted definition is clear and would be readily understood by any person of ordinary skill in the art. Simply stated, Z can be H, an alkali metal ion, or two Z may be taken together in the form of an alkaline earth metal ion. Appropriate reconsideration and withdrawal of the indefiniteness rejections is respectfully requested. If the Examiner still considers that the present claim language is unclear, Applicants respectfully request the Examiner to set forth language that would be acceptable. Applicants have repeatedly attempted to define the Z component in acceptable terms, and if the present terms are not acceptable, the best option (short of appeal) is for the Examiner to suggest appropriate and acceptable language. Applicants earnestly and respectfully request the Examiner either to indicate the acceptability of the present language or to suggest language that would be acceptable.

**Prior Art Issues**

The claims stand rejected as obvious over several combinations of references, including the Osetrova reference (the abstract of an article entitled "Use of Ethylenediamine in Electroplating", Sbornik Nauchnykh Trudov-Institut Tsvetnykh Metallov im. M.I. Kalinina (1960), Vol. 33, pp. 396-399). All of the rejections rely upon Osetrova in combination with the other references.

After some searching, Applicants have obtained a complete copy of the Osetrova reference in the original Russian language, and have obtained a complete professional translation into English of the Osetrova reference. Copies of both are submitted herewith.

These references are submitted without an IDS, since the reference has been made of record previously by the Examiner, Applicants do not consider that it is necessary to include an IDS. Should the Examiner disagree, Applicants will re-submit the copies of the complete reference and its translation as may be considered necessary by the Examiner.

Applicants note that, as stated in the previous Office Actions, Osetrova clearly teaches replacement of sulfate and cyanide with ethylenediamine, so that in Osetrova the metal ions are added as the salt of ethylenediamine instead of, i.e., replacing, the salts such as those now specified in Applicants' claims, rather than in combination with the counterions specified in Applicants' claims. In the Office Action, it was contended that, despite this teaching, it would have been obvious to combine the ethylenediamine with the other counterions, when both are allegedly used for the same purpose.

Applicants respectfully disagree with this contention, and respectfully submit that the combination would not have been obvious, for the following reasons.

Upon review of the translation of Osetrova, it becomes readily apparent that Osetrova in fact both teaches away from the use of ethylenediamine with zinc ions and teaches away from the use of ethylenediamine with nickel ions.

To wit, at page 3, last paragraph of the translation, Osetrova states with respect to zinc plating:

The possibility of zinc plating and cadmium deposition from ethylenediamine electrolytes containing 0.5 M [MeEn3] and 0.5-1.0 M En with various pH values was also studied. The results obtained demonstrated that although high-quality coatings can be obtained from these electrolytes under certain conditions, *because such electrolytes have poor dispersivity (almost identical to that of simple acidic electrolytes), they can hardly be recommended for replacing the conventional acidic and cyanide electrolytes.*

Similarly, at page 4, first paragraph of the translation, Osetrova states with respect to nickel plating:

Electrode processes taking place in deposition of nickel and cobalt from ethylenediamine electrolytes have a large number of features that are of theoretical interest. *However, the instability of solutions makes it practically impossible to perform long-term deposition of high-quality coatings.* This instability is due to electrochemical behavior of ethylenediamine on nickel and cobalt anodes that catalytically accelerate the oxidation of ethylenediamine. At the same time, replacing soluble nickel and cobalt anodes with other anodes failed to resolve the problem. Because of

a high degree of interdependence of cathodic and anodic processes, such a replacement causes structure deterioration in the cathodic deposits.

Finally, in conclusion, at page 4, the final two paragraphs of the article text, Osetrova states:

Summarizing the obtained results relating to the possibility of using ethylenediamine for galvanic bath electrolytes, there is good reason to use ethylenediamine for copper deposition. Replacing sulfate copper electrolytes with ethylenediamine electrolytes makes it possible to obtain more uniform coatings and also enables the direct deposition of copper on iron. Further, ethylenediamine electrolytes for copper deposition can also replace cyanide electrolytes because the ethylenediamine electrolytes have lower toxicity and higher stability and ensure higher productivity than cyanide electrolytes.

*On the other hand, ethylenediamine is still unsuitable for electrodeposition of other metals.*

(Emphasis added in all of the above quotes.) Thus, not only does Osetrova teach the replacement, and not the combination, of sulfate with ethylenediamine for use with zinc and nickel, but more importantly, Osetrova both explicitly teaches away from the use of ethylenediamine with zinc and explicitly teaches away from the use of ethylenediamine with nickel.

Accordingly, Applicants respectfully submit that the presently claimed invention would not have been obvious over the asserted combination of references, all of which rely upon the alleged teaching of Osetrova to use ethylenediamine in such a plating bath. In fact, as clearly shown by the reference itself, Osetrova does not so teach, and in fact, the teachings of Osetrova actually support the non-obviousness of the presently claimed invention by having taught away from it.

Applicants respectfully submit that the present claims fully distinguish over and are patentable over each of the combinations of cited references as set forth in the Office action. Specifically, none of the cited references or combinations thereof disclose or suggest the inclusion of the ethylenediamine or its methyl-substituted derivatives; propylenediamine or its methyl-substituted derivatives; diethylenetriamine or its methyl-substituted derivatives; or a polymer of an aliphatic amine, in addition to and together with the other components specified in the presently pending claims.

As noted, Osetrova teaches that zinc and nickel do not work to deposit a suitable metal layer when used with ethylenediamine. In Applicants' claims, the ethylenediamine

or its methyl-substituted derivatives; propylenediamine or its methyl-substituted derivatives; diethylenetriamine or its methyl-substituted derivatives; or a polymer of an aliphatic amine is provided to the bath in addition to the zinc salts and nickel salts specified in the claims. This combination as claimed fully distinguishes the present invention from the asserted combinations of references including Osetrova, since any fair and reasonable reading of the disclosure of Osetrova would lead away from the present invention, not towards it.

For at least the foregoing reasons, Applicants respectfully submit that the presently pending claims address and overcome all of the rejections set forth in the Office Action mailed 05 May 2008, and that these claims fully patentably distinguish over the prior art of record. Notice to such effect is respectfully requested.

### **Conclusion**

For the foregoing reasons, Applicants respectfully submit that the present application and claims are in condition for allowance and notice to such effect is respectfully requested.

Should the Examiner consider that a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

In the event any additional fees are due in connection with the filing of this paper, the Commissioner is authorized to charge those fees to our Deposit Account No. 18-0988, docket No. ATOTPO109US.

Respectfully submitted,  
RENNER, OTTO, BOISSELLE & SKLAR, L.L.P.

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By: /thomaswadams/  
Thomas W. Adams  
Reg. No. 35,047

1621 Euclid Avenue  
Nineteenth Floor  
Cleveland, Ohio 44115  
Telephone: (216) 621-1113  
Facsimile: (216) 621-6165

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